Psychometric Properties and Concurrent Validity of the Schizotypal Ambivalence Scale

By: Thomas R Kwapil, Monica C. Mann and Michael L. Raulin

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Abstract:

The Schizotypal Ambivalence Scale (SAS) is a 19-item revision of the Intense Ambivalence Scale, which was designed to identify ambivalence described by Meehl as characteristic of schizotypy and schizophrenia. The present study examined the psychometric properties of the SAS in a sample of 997 college students. The study also provided preliminary evidence regarding the concurrent validity of the measure for identifying schizophreniclike symptoms and other forms of psychopathology in a sample of 131 students. The SAS has good internal consistency reliability (.84) and correlates moderately with other psychometric indices of schizotypy. High SAS scores were associated with schizotypal, schizoid, and paranoid symptoms, and with poorer overall functioning (after the removal of variance associated with other schizotypy scales), but were not associated with major depressive disorder or ratings of substance use and abuse.

Keywords: psychology | schizotypal ambivalence scale | paranoia | schizotypy | intense ambivalence scale | schizophrenia

Article:

The present study investigates the psychometric properties and concurrent validity of the Schizotypal Ambivalence Scale (SAS;Raulin, 1986) for identifying schizophreniclike symptoms and other forms of psychopathology in a sample of college students. The study establishes

preliminary norms for college students on the SAS, examines the relation of the scale with other psychometric indicators of schizotypy, and provides initial evidence regarding the concurrent validity of the scale for identifying schizotypic deficits.

Ambivalence, Schizophrenia, and Schizotypy

Eugen Bleuler (1950) developed the term “ambivalence” to represent a tendency to simultaneously experience divergent emotions to situations, objects, or people (e.g., simultaneously experiencing intense love and hatred for a person). Bleuler believed that ambivalence was one of the four fundamental symptoms of schizophrenia that were always present in the disorder. Likewise, Meehl initially described ambivalence as one of the four core symptoms of schizotypy (the latent personality organization that provides the liability for the development of schizophrenia). However, Meehl (1989; 1990) subsequently assigned ambivalence a secondary role as a potentiating factor in schizotypic persons. Despite the prominent role of ambivalence in Bleuler’s formulation of schizophrenia and Meehl’s initial conceptualization of schizotypy, the construct received little attention from developmental and experimental psychopathologists studying schizophrenia and related conditions during the past 90 years. The paucity of studies appears largely caused by three factors: a) lack of adequate operationalization of the construct, b) a greater focus on the role of ambivalence in borderline personality disorder (Kernberg, 1977), and c) that the term was used widely by psychoanalytic theorists in the study of schizophrenia during the last century. However, recent studies have attempted to operationalize ambivalence and assess its relation with schizotypy and schizophrenia.

Psychometric Assessment of Ambivalence

Intense Ambivalence Scale

Raulin (1984) designed the 45-item Intense Ambivalence Scale (IAS) as part of a larger effort to develop inventories of schizotypic indicators that might identify adolescents and young adults at risk for schizophrenia and related conditions (Chapman and Chapman, 1985). The measure was designed to tap the ambivalence that Meehl (1962; 1964) argued was central to schizotypy. Cross-sectional interviews with college students indicated that the scale identifies persons who display more divergent emotions toward key people in their lives compared with control participants. Patients with schizophrenia scored significantly higher on the scale than control participants, but not significantly higher than a group of outpatient clinic clients. Furthermore, depressed inpatients scored significantly higher on the scale than patients with schizophrenia.

These data suggest that the IAS measures ambivalence that is a generalized symptom of psychopathology found in patients with a variety of psychiatric conditions (Raulin, 1984)

Kwapil et al. (2000) examined the predictive validity of the IAS in a subset of psychosis-prone and control participants from Chapman et al.'s (1994) 10-year longitudinal study. The psychosis-prone or schizotypic participants were identified by deviantly high scores on the Perceptual Aberration (Chapman et al., 1978) and Magical Ideation (Eckblad and Chapman, 1983; Per-Mag) scales. High scores on the IAS predicted psychoticlike and depressive symptoms, and the development of psychotic illnesses at the 10-year follow-up assessment (after the removal of variance for membership in the psychosis-prone and control groups). High IAS scores were also associated with substance abuse, schizotypal symptoms, and impaired functioning at both the initial and follow-up assessments. The IAS did not differentially enhance the predictive power of the Per-Mag scales.

Schizotypal Ambivalence Scale

Given the finding that the IAS appeared to be associated with a variety of psychopathologies, Raulin (see Raulin and Brenner, 1993) examined the individual discrimination of each IAS item for schizophrenic and depressed patients. They noted that the items that discriminated schizophrenic patients had a matter-of-fact tone and seemed to emphasize the simultaneous experience of contradictory emotions or the rapid and almost random change of emotions back and forth over time (e.g., "Love and hate tend to go together"). In contrast, the items that discriminated the depressed patients had a strong emotional tone and usually represented a change from positive to negative feelings (e.g., "I can think of someone right now that I thought I could trust, but now I know I can't"). Based on these findings, Raulin (1986) derived the SAS, which includes 12 items from the original scale and seven new items.

The present study examines the psychometric properties and the concurrent validity of the SAS in a sample of college students. Specifically, the study investigates the need for separate norms by gender and ethnicity. It also examines the item and scale characteristics, internal consistency reliability, and the relation of the scale with other questionnaire measures of psychosis proneness. The study also examined the concurrent validity of the scale in a group of psychosis-prone and control participants. The larger purpose of the study was to provide a preliminary examination of the relation between ambivalence (as operationalized by the SAS) and schizotypy (as operationalized by widely used questionnaire and interview measures). It is hypothesized that the SAS will be associated with the presence of psychoticlike and schizotypal symptoms, but not with major depressive disorder (MDD) or substance abuse symptoms.

Methods

Participants

Usable mass-screening packets were completed by 997 college students enrolled in general psychology courses at the University of North Carolina at Greensboro over the course of two semesters. These participants included 539 Caucasian and 221 African-American women, and 181 Caucasian and 56 African-American men. The sample was limited to Caucasian and African-American students because the availability of students from other ethnic minorities was limited in these particular courses. A subset of 131 participants was administered a structured diagnostic interview. The interview participants included 35 students who received standard scores of at least 1.96 on the Per-Mag scales, and 96 control participants who had standard scores of less than .5 on both scales. Demographic characteristics of the interview participants are listed in Table 1.

Table 1

TABLE 1
Demographic Characteristics of the Interviewed Participants

	Group	
	Per-Mag[a] (n = 35)	Control (n = 96)
	Mean (SD)	Mean (SD)
Age (yr)	18.8 (0.9)	19.2 (1.2)
Years of education	12.1 (0.4)	12.2 (1.4)
Schizotypal ambivalence score	10.6* (4.3)	5.2 (4.5)
% Female	77	75
% African American	17	28

[a] Perceptual aberration-magical ideation group.
*$p < .001$.

Materials and Procedure

The screening packet included a demographic information sheet, the SAS, the Per-Mag scales, the Revised Social Anhedonia (Eckblad et al., 1982) and Physical Anhedonia (Chapman et al., 1976) scales, and a 13-item infrequency scale (Chapman and Chapman, 1986). The items from the questionnaires were intermixed. The students completed the packet during mass-screening sessions that lasted approximately 90 minutes, and they received course credit for their

participation. Participants who did not identify their ethnic background, failed to complete at least 5% of the screening items, or received a score of 3 or greater on the Infrequency Scale were omitted from the study

Psychosis-Proneness Scales. The SAS (Appendix 1) contains 19 true-false items. The Perceptual Aberration Scale contains 35 items that assess mild schizophreniclike perceptual and body-image distortions, whereas the Magical Ideation Scale contains 30 items that assess belief in experiences that are generally considered implausible or invalid. High scorers on the Per-Mag scales are typically combined into a single Per-Mag group because the measures tend to correlate about as highly as possible given their reliabilities (Chapman et al., 1982). The Revised Social Anhedonia Scale contains 40 items that tap schizoid asociality and social disinterest. The Physical Anhedonia Scale consists of 61 items that assess deficits in aesthetic and sensory gratification. Each of the psychosis-proneness scales was constructed following the method of rational scale development advocated by Jackson (1970). Candidate items were carefully screened to ensure high item-scale correlations and to rule out correlations with measures of social desirability and acquiescence. Coefficient alpha was greater than .80 on each of the measures in the present sample

Diagnostic Interview. The interview contained portions of the Structured Clinical Interview for DSM-IV (First et al., 1995) that assess MDD, substance use, and demographic information. Major depressive disorder was coded as present or absent, whereas substance use and impairment were coded by using the rating system described by Kwapil (1996). The modules of the International Personality Disorders Examination (World Health Organization, 1995) that assess schizoid, paranoid, and schizotypal personality disorders were also included. The Wisconsin Manual for Assessing Psychotic-like Experiences (Chapman and Chapman, 1980;Kwapil et al., 1999) was used to assess psychotic symptoms across a broad range of clinical and subclinical deviancy. The Negative Symptom Manual (Kwapil and Dickerson, 2001 3), which provides a companion rating system to the Wisconsin Manual, was used to quantify negative symptoms of schizophrenia across a range of clinical and subclinical deviance. Each participant's overall functioning was rated by the interviewer using the Global Assessment Scale (Endicott et al., 1976), which indicates current functioning with a range from extreme psychopathology to superior adjustment. Although interrater reliability was not assessed on this sample, reliability data from our laboratory are available for several of these measures. Interrater reliability was .89 for the Wisconsin Manual, .94 for the Negative Symptom Manual, and .87 for the Global Assessment Scale. The diagnostic interviews lasted approximately 2 hours and were audiotaped. The interviewers and raters were unaware of the participants' group membership. One clinical psychologist and five advanced graduate students with extensive training and

clinical experience conducted the interviews. Students received course credit or payment (if they had already earned all of their course credit) for their participation.

Results

Psychometric Characteristics of the Schizotypal Ambivalence Scale

The psychometric properties of the SAS were examined for the 997 participants in the mass-screening sample (mean = 6.45, SD = 4.32, range = 0 to 19). There was no significant main effect for ethnicity (Caucasian versus African-American;$F_{1,993} = 1.24$) or gender ($F_{1,993} = .47$) on the SAS, nor was there a significant ethnicity-gender interaction ($F_{1,993} = .37$). Therefore, subjects were combined across gender and ethnicity for the remaining analyses. The coefficient alpha reliability of the scale was .84, which is comparable with the reliability of the considerably longer IAS. Item-scale correlations for the SAS ranged from .41 to .60. The distribution of scores was positively skewed and flattened (skew = .53, kurtosis = - .43). The positive skew of the distribution resulted from the inclusion of items of relatively low endorsement to create a scale that was more discriminating at the high end of the distribution. The item-scale correlations and endorsement rates are provided with the items in the Appendix. Note that despite the selection of items with a low rate of endorsement, three of the items had endorsement rates of greater than 50% in the present sample. The SAS correlated .52 with the Perceptual Aberration Scale, .47 with the Magical Ideation Scale, .43 with the Revised Social Anhedonia Scale, and .17 with the Physical Anhedonia Scale.

Interview Study

Table 2 presents the zero-order correlations of SAS scores with measures of psychopathology and adjustment for the combined Per-Mag and control groups. High scores on the scale were associated with ratings of psychoticlike, schizotypal, and paranoid symptoms, and with poorer overall adjustment, but not with MDD or ratings of substance use and abuse.

Table 2

TABLE 2
Zero-Order Correlations of Schizotypal Ambivalence Score with Participant Characteristics, Adjustment, and Psychopathology (N = 131)

Age (yr)	−.07
Education	−.13
Global Adjustment Scale	−.34****
Psychoticlike experiences	.20**
Negative Symptom Manual	.13
IPDE[a]	
Schizotypal dimensional score	.21***
Schizoid dimensional score	.17*
Paranoid dimensional score	.27***
Major depressive disorder	.05
Alcohol use	.06
Alcohol abuse	.02
Drug use	.12
Drug abuse	.12

[a] International Personality Disorders Examination.
*$p < .10$; **$p < .05$; ***$p < .01$; ****$p < .001$.

Multiple regression analyses were computed to examine whether SAS scores were associated with psychopathology after the variance associated with the Per-Mag and control groups was removed. A dummy code representing Per-Mag and control-group membership was entered at the first step, followed by the SAS score at the second step and the group-by-scale interaction at the final step. The increment in R2 at each step is presented in Table 3. The dummy or group coding was used instead of the actual scores on the Per-Mag scales because the subject selection criteria created a discontinuous distribution of scores on the two scales. Consistent with the findings of Chapman et al. (1994), the Per-Mag group exceeded the control group on most ratings of psychopathology. High SAS scores were significantly associated with schizotypal (3.0% of the variance), schizoid (3.3%), and paranoid traits (5.0%), and with poorer overall adjustment (6.5%), beyond the variance accounted for by Per-Mag–group membership. The SAS did not account for an increment in the variance of psychoticlike experiences. Furthermore, the scale generally did not differentially potentiate the predictive power of the Per-Mag scales (as shown by the nonsignificant increments in variance accounted for by the interaction terms in Table 3). Surprisingly, the group-by-scale interaction was significant for diagnoses of MDD, indicating that for the Per-Mag group, lower scores on the SAS were associated with a greater likelihood of depression.

Table 3

TABLE 3
Increment in R^2 due to Group Membership, Schizotypal Ambivalence Score, and Group by Ambivalence Interaction for Measures of Psychopathology

Dependent Measure	Group[a] (*df* = 1/129)	Schizotypal Ambivalence (*df* = 1/128)	Interaction[b] (*df* = 1/127)
Global Adjustment Scale	.094****	.065***	.000
Psychoticlike experiences	.219****	.003	.006
Negative Symptom Manual	.008	.027*	.001
IPDE[c]			
Schizotypal dimensional score	.147****	.030**	.002
Schizoid dimensional score	.001	.033**	.014
Paranoid dimensional score	.038**	.050***	.011
Major depressive disorder	.013	.000	.032**
Alcohol use	.013	.001	.004
Alcohol abuse	.035**	.002	.010
Drug use	.049**	.003	.013
Drug abuse	.077***	.001	.002

[a] Dummy coding for group membership in the perceptual aberration-magical ideation or control groups.
[b] Interaction of group membership and Schizotypal Ambivalence Scale score.
[c] International Personality Disorders Examination.
*$p < .10$; **$p < .05$; ***$p < .01$; ****p

Discussion

Although ambivalence played a major role in theoretical conceptualizations of schizophrenia and schizotypy, the construct has not received much attention in the experimental and developmental psychopathology literature. A recent literature search showed more than 2000 citations containing the word ambivalence dating back to 1887. However, fewer than 100 of these involved schizophrenia or related topics, and the majority of these publications involved psychoanalytic formulations. Nonetheless, this leaves the questions of why Bleuler and Meehl placed so much importance on ambivalence, and what role ambivalence plays in schizophrenia and schizotypy. The SAS appears to provide a promising measure for assessing ambivalence in the context of schizophrenia and related conditions.

The original IAS was developed as part of a larger program of research to identify persons with schizotypic traits who were presumed to be at heightened risk for schizophrenia. Raulin (1986) developed the SAS because of a concern that the IAS predicted a general risk for psychopathology rather than a more specific risk for schizophrenia and related conditions—a hypothesis that was supported by the findings of Kwapil et al. (2000)

The present study provides information regarding the psychometric characteristics and concurrent validity of the SAS. The results indicate that this revised questionnaire has good internal consistency reliability (especially for a relatively brief scale) and all of the item-scale correlations are comparable. Preliminary findings with college students suggest that the scale is neither culturally (Caucasian versus African-American) nor gender biased. The finding that the SAS is moderately correlated with the Perceptual Aberration, Magical Ideation, and Revised Social Anhedonia Scales is striking given that the former two measures have been found to predict the development of psychosis (Chapman et al., 1994) and the latter predicted the development of schizophrenia-spectrum disorders (Kwapil, 1998). The scale was only modestly correlated with the Physical Anhedonia Scale—a measure that has not been found to be an effective predictor of the development of schizophrenia or related conditions in college students.

The SAS accounted for variance in schizophrenia-spectrum personality traits and impaired adjustment beyond the effects of the Per-Mag scales. Unlike Raulin (1984) and Kwapil et al.'s (2000) findings for the IAS, the SAS was not associated with major depression or ratings of substance use and abuse. The findings regarding major depression were not due to a lack of depression in the sample, because 16% of the interviewed subjects met criteria for the disorder (Per-Mag group = 23%, control = 14%). Depression and substance use are comorbid with schizophrenia (American Psychiatric Association, 1994) and schizotypy (Kwapil, 1996;Meehl, 1964). However, we expect that a useful indicator of schizotypy should be more robustly associated with core symptoms of the condition than with comorbid problems.

Unlike the study by Kwapil et al. (2000), the present cross-sectional study could not address the predictive validity of the SAS. However, consistent with our hypotheses, the SAS does appear to be more specifically related to schizophrenia-spectrum problems than the original scale (though this finding should be interpreted cautiously because the original scale was not administered in the present study). The improvement in prediction over the Per-Mag scales was additive, not multiplicative, because the SAS did not differentially improve the prediction of psychopathology in the psychosis-prone students relative to the control participants. The lone exception was that lower SAS scores among Per-Mag subjects were associated with increased risk of major depression. The findings indicated that ambivalence is related to clinical features of schizotypy. However, the design of the present study did not allow us to compare the validity of Meehl's original and revised formulations of the role of ambivalence in schizotypy.

Kwapil et al. (2000) reported that the IAS was primarily associated with positive, rather than negative, schizotypy or psychosis proneness (e.g., that scale was not associated with schizoid symptoms). The present findings indicate that the SAS is associated with both positive and

negative features of schizotypy, though the relation with schizoid traits and the tentative relation with negative symptom ratings in the regression analyses may reflect a suppression effect of the Per-Mag scales (measures that assess positive, but not negative, symptoms of schizotypy).

The present findings do not invalidate the IAS as a measure of ambivalence or as a predictor of psychopathology. In fact, the IAS is a psychometrically sound instrument that is a useful predictor of the development of psychopathology. However, the present findings suggest that the SAS may be a more promising measure for the study of schizotypy and schizophrenia, whereas the IAS may be more useful for the general study of ambivalence (specifically of mood and borderline personality disorders).

The SAS provides a reliable and brief self-report inventory that appears promising as a research measure of one facet of schizotypy and schizophrenia. The questionnaire is not presently recommended for applied use because of the lack of research conducted with clinical samples. The generalizability of the present study is limited because it used a relatively stratified sample to assess the psychometric properties of the measure, and because it assessed validity concurrently in a sample selected using other measures. Nonetheless, the results appear to justify further study of the measure, including the development of norms for different demographic groups and the assessment of the concurrent and predictive validity of the questionnaire in a sample of psychosis-prone and control participants selected on the basis of the scale (rather than selected on the Per-Mag scales). Furthermore, the results of Kwapil et al. (2000) and the present study justify further study of the construct of ambivalence and its role in schizophrenia and schizotypy.

FOOTNOTES

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